REMARKS

The above-identified application is United States application serial number 10/737,374 filed on December 16, 2003. Claims 1-16 and 18-37 are pending. Claim 17 has been canceled. Claims 1-16 and 18-37 are rejected. Applicant respectfully traverses these rejections.

Claim Rejections - 35 U.S.C. § 103

Claims 1-5, 7-13, 15-16, 32-33 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung *et al.* (US 6,195,760) in further view of Pandya (US 2004/0037319). Independent claim 1, as amended, recites "with meta-data regarding the contents and layout of memory regions within the persistent memory unit, and to provide access to the meta-data and the checkpoint data via a remote direct memory read command from the backup process". These features are supported by at least paragraphs [0032] and [0043] of the specification. The cited prior art does not disclose or suggest these features. Claim 1 is distinguishable from the prior art including Chung and Pandya, alone and in combination, for at least these reasons.

Claims 2-8 depend from claim 1and include features that further distinguish them from the cited references. For example, the cited prior art does not disclose or suggest the features of claim 2, which recites "a persistent memory manager configured to...keep the meta-data on the persistent memory unit consistent with the checkpoint data stored on the persistent memory unit". These features are supported by at least paragraph [0043] of the specification.

As a further example, claim 9 recites "the persistent memory unit is configured with address protection and translation tables to authenticate requests from remote processors, and to provide access information to authenticated remote processors." Chung does not disclose or suggest these features. In contrast, the cited portions of Chung teach a ReplicaManager that receives a registration message from an application module. The registration message identifies the application module, the host machine, the replication strategy, and the degree of replication for the application

module. (Chung col. 3 lines 1-15). Nothing in Chung teaches or suggests that the message includes address protection and translation tables to authenticate requests from remote processors, nor does Chung disclose or suggest that the tables are used to provide access information to authenticated remote processors. Claim 1 is distinguishable from Chung and Pandya, alone and in combination, for at least these reasons.

Independent claim 10, as amended to include the features of claim 17 (now canceled), recites "storing access information to the physical addresses of the checkpoint data in the persistent memory unit when the primary process opens a memory region for the checkpoint data; and providing the access information to subsequent requestors of the checkpoint data." Traversat is cited as teaching this feature yet Traversat only teaches using lease information to re-establish leases to services and resources when an application is cancelled on one system and resumed on another. (Traversat col. 17 lines 4-11). Nothing in Traversat discloses or suggests storing access information to the <u>physical addresses of the checkpoint data</u>. Lease information for services and resources is not equivalent to access information to the physical addresses of the checkpoint data. Further, the paging scheme in Traversat is an operating system mechanism, utilizing the page fault mechanism built into all modern processors to trigger the operating system to load or store memory pages. It is not a lightweight (low latency/overhead) user-space mechanism like those used to access RDMA networks. Paging is also not byte grained. An entire page must be loaded or stored. Thus, one skilled in the art would not be motivated to combine the paging features of Traversat with the RDMA of Pandya because it would eliminate the benefit of accessing data in byte granularity.

Claims 11-16 and 18-20 depend from claim 10 and include features that further distinguish them from the cited references.

Independent Claim 21, as amended, recites

"authenticate requests from remote processors, and provide access
      information to authenticated remote processors based on address
      protection and translation tables in the persistent memory unit;
translate the virtual address to a physical address in the persistent
      memory unit, wherein the persistent memory unit is addressable at
      byte-level granularity; and
allow access to the checkpoint data for use in a backup process."

None of the cited references disclose or suggest these features. Chung teaches
a ReplicaManager that receives a registration message from an application module.
The registration message identifies the application module, the host machine, the
replication strategy, and the degree of replication for the application module. (Chung
col. 3 lines 1-15). Nothing in Chung teaches or suggests that the message includes
address protection and translation tables to authenticate requests from remote
processors, nor does Chung disclose or suggest that the tables are used to provide
access information to authenticated remote processors. Claim 21 is distinguishable
from the cited references, alone and in combination, for at least these reasons.

Independent claims 26, 32, and 35 recite "receiving access information to
physical addresses of checkpoint data in the persistent memory from the persistent
memory unit". The cited references, alone and in combination, do not teach or suggest
receiving access information to physical addresses of checkpoint data in the persistent
memory from the persistent memory unit. Claims 26, 32, and 35 are distinguishable
from the cited references, alone and in combination, for at least these reasons.

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CONCLUSION

The application, including claims 1-16 and 18-37, is believed to be in condition for allowance and notice to that effect is solicited. Should any issues remain that might be subject to resolution through a telephone interview, the examiner is requested to telephone the undersigned at (949) 350-7301.

I hereby certify that this correspondence is being transmitted to the USPTO via electronic filing on the date shown below:
/Joy C. Ngo/
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Respectfully submitted,

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